Name: _____ Class: _____ Date: _____

Algebra 2 CP: Chapter 11 Quiz Review

$a_n = a_1 + (n-1)d$ add/subtract

Write the rule for the nth term of the arithmetic sequence.

1. 1, 7, 13, 19, 25, ... $d = 6$

$a_n = a_1 + (n-1)d$

$a_n = 1 + (n-1)(6)$

$a_n = 1 + 6n - 6$

$\boxed{a_n = 6n - 5}$

2. 4, 6, 8, 10, 12, ...

$a_n = a_1 + (n-1)d$

$a_n = 4 + (n-1)(2)$

$a_n = 4 + 2n - 2$

$\boxed{a_n = 2n + 2}$

3. 3.5, 3, 2.5, 2, 1.5, ...

$a_n = a_1 + (n-1)d$

$a_n = 3.5 + (n-1)(-0.5)$

$a_n = 3.5 + -0.5n + 0.5$

$\boxed{a_n = -0.5n + 4}$

4. $d = 5$

$a_1 = 13$

$a_n = a_1 + (n-1)d$

$a_n = 13 + (n-1)(5)$

$a_n = 13 + 5n - 5$

$\boxed{a_n = 5n + 8}$

$S_n = n\left(\frac{a_1 + a_n}{2}\right)$

Find the sum of the first n terms of the arithmetic series.

5. $8 + 20 + 32 + 44 + \ldots$ for $n = 14$ (a_1, $d = 12$)

$a_n = a_1 + (n-1)d$

$a_{14} = 8 + (14-1)(12)$

$a_{14} = 8 + (13)(12)$

$a_{14} = 8 + 156 = 164$

$S_n = n\left(\frac{a_1 + a_n}{2}\right)$

$= 14\left(\frac{8 + 164}{2}\right) = 14\left(\frac{172}{2}\right)$

$= 14(86) = \boxed{1204}$

6. $-6 + -2 + 2 + 6 + \ldots$ for $n = 20$ (a_1)

$a_n = a_1 + (n-1)d$

$a_{20} = -6 + (20-1)(4)$

$a_{20} = -6 + (19)(4)$

$a_{20} = -6 + 76 = 70$

$S_n = n\left(\frac{a_1 + a_n}{2}\right)$

$= 20\left(\frac{-6 + 70}{2}\right) = 20\left(\frac{64}{2}\right)$

$= 20(32) = \boxed{640}$

Write a rule for the nth term of the geometric sequence.

multiply/divide

$a_n = a_1 r^{n-1}$

7. 64, 32, 16, 8, 4, ... $r = \frac{1}{2}$

$a_n = a_1 r^{n-1}$

$\boxed{a_n = 64\left(\frac{1}{2}\right)^{n-1}}$

8. 6, 12, 24, 48, ... $r = 2$

$a_n = a_1 r^{n-1}$

$\boxed{a_n = 6(2)^{n-1}}$

9. 200, 20, 2, 0.2, 0.02, ... $r = \frac{1}{10}$

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$a_n = a_1 r^{n-1}$

$a_n = 200\left(\frac{1}{10}\right)^{n-1}$

10. $r = 3$

$a_1 = 6$

$a_n = a_1 r^{n-1}$

$a_n = 6(3)^{n-1}$

Find the sum of the geometric series.

11. $16 + 32 + 64 + 128 + \ldots$ for $n = 5$ $r = 2$

$S_n = a_1\left(\frac{1-r^n}{1-r}\right)$

$S_n = a_1\left(\frac{1-r^n}{1-r}\right) = 16\left(\frac{1-2^5}{1-2}\right) = 16\left(\frac{1-32}{-1}\right) = 16\left(\frac{-31}{-1}\right)$

$= 16(31) = 496$

12. $-90 + 30 + -10 + \frac{10}{3} + \ldots$ for $n = 16$ $r = -\frac{1}{3}$

$S_n = a_1\left(\frac{1-r^n}{1-r}\right) = -90\left(\frac{1-\left(-\frac{1}{3}\right)^{16}}{1--\frac{1}{3}}\right) \approx -67.5$